AFRICAN WEB-BASED ANIMAL HEALTH INFORMATION: ANALYSIS OF ONLINE DATABASES

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Abstract

This paper examines the coverage of animal health information published on the web from Africa or about Africa using content analysis method. A total of 27 agricultural academic indexing and abstracting online databases were selected for the study. African animal health information was determined according to the specific objectives, which included the available scientific content, the ease of locating information once the site is found and the currency of information. Literature review was undertaken to identify challenges and opportunities for African scientists to publish on the web. The study reveals that the representation of African animal health information on the web was generally low by 8.28%. This implies that the web is dominated with the information from developed world. The paper recommends that African scientists should utilize both open access repositories and journals to increase accessibility of the local animal health content on the web.

Introduction

Developments in animal health research in Africa cannot be strengthened without access to the global scientific information. Animal health research is important for increasing efficiency in productivity and profitability of this sector partly through innovative scientific information and knowledge. Studies have raised a concern on the low representation of African research information on the web, including animal health information. Many factors have been attributed to such under-representation of research information. First, some of the mainstream journals have a record of prejudicing submissions from developing countries' scientists (Horton, 2000; Cetto and Hillerud, 1995). Second, few African journals are indexed by the Science Citation Index, and those that are indexed have low-impact factors (Coura and Willcox, 2003; Adam 2002). Thus, animal health scientists in developing countries are understandably reluctant to publish internationally. Third, there is low funding for research in Africa. Other reasons include the African scientists' low writing skills, low staff morale, and narrow opportunities for professional development (Kapange, 1999). In addition, most libraries in Africa have small, old and incomplete collections, thus most researchers do not have access to either local or international published knowledge.

Many initiatives have been undertaken to resolve the problem of information access in developing countries including Africa, but these initiatives, generally depend on grants or subsidies, hence they are unlikely to be sustainable (Chan *et al.*, 2005). While previous studies show that relevant grey literature coming out of Africa is abundant, according to Raseroka (1993), it is neither collected nor made available to African libraries or the web. This is probably due to low awareness of the open access (OA) movement together with the free open source and web technology which reduce or completely eliminate the online publishing cost barrier.

OA movement together with the open source, web technology and open standards present many possibilities to the animal health scientists to solve the problem of online publishing as well as the inadequate access to the African and global knowledge. OA offers access to information which is digital, online, free of charge, and free from most copyright and licensing restrictions (Suber, 2005). Thus, if used effectively, OA movement could benefit African animal health scientists to publish their research results in a range of OA venues such as the OA journals, OA repositories, blogs etc.

While claims have been made over low African scientific information on the web, there is dearth of empirical study to indicate the magnitude of the problem particularly on animal health information. This study was set to establish the extent to which African animal health information is represented on web-based databases. To define as to what constitutes animal health information, a broader view of the term is adopted that include: animal hygiene, animal pests and diseases, animal genetics, animal biotechnology, breeding and taxonomy, animal nutrition and feeds, animal production systems and veterinary medicine.

The main objective of this study was to establish the extent to which African animal health information is represented on the web. Focus was on evaluating those databases which offer scientific animal health information on the web. Specifically the study aimed at determining the African web-based animal health content. Online databases were visited to determine if they contained animal health information, and specifically if they had content published by Africans or about Africa. The second objective of this study was to determine how easy it was to locate information once the site is already located. This objective aimed at determining how accessible

the content was especially in the developing world where Internet connectivity is poor. The third objective was to determine the currency and update-ness of the information. Lastly, the study examined the challenges and opportunities for African scientists to publish their research findings on the web.

Methodology

The methodology used in this study was mainly content analysis. According to Jackson (1995) content analysis is a technique for making references by objectively and systematically identifying specified characteristics of messages. In addition, literature review was done to identify challenges and opportunities for African scientists on the web.

Content analysis was conducted between December 2004 and February 2005 to determine what agricultural online databases have in terms of researched animal health information published from Africa or about Africa. In the first stage, two major search engines (google and yahoo) and agricultural web indexes, lists and directories were used to identify online databases that contain animal health information. The agricultural lists and directories included the National Agricultural Library (NAL) of USA, Food and Agriculture Organization of the United Nations (FAO) and International Network of Availability of Scientific Publications (INASP). Finally, a total of 27 online databases were selected for the study based on their size and coverage in terms of animal health information. This included 19 academic indexing services and 8 international organizations online databases.

The coverage of African animal health information was determined according to the specific objectives: the African animal health content available on the web, how easy it was to locate information on the site, how current and update the information was and challenges and opportunities for African scientists to publish their research results on the web. Combinations of several search strings were used to retrieve the required articles. Such combinations include animal health, animal hygiene, animal diseases, animal genetics, animal biotechnology, animal nutrition, animal production systems, veterinary medicine and Africa. The currency of animal health information was examined using advanced search facilities where the publication date field was used. In assessing how easy it was to locate information on the sites, the following facilities were

examined: search, what's new, help, Frequently Asked Questions (FAQ) and E-mail alerts. These were important because they help users to easily access and retrieve information on the web.

Findings and Discussion

The findings are presented and discussed in the following categories: the representation of the African animal health information on the web, the representation of the African animal health in the African and non-African online databases, coverage of African animal health information in the individual online databases, the currency of African Animal Health information, how easy it is to locate information, challenges and opportunities for African scientists to publish their research results on the web.

Representation of African animal health information on the web: Findings in Figure 1 indicate that there were about 36,054 articles (8.28%) on African animal health information in the analyzed online databases. These include 32,517 articles (7.47%) of the academic indexing services and 3,537 articles (0.81%) of the international organizational online databases. This reveals how under-represented was the African animal health information on the web as compared to the information published from outside Africa. Results also show that African animal health information is more indexed in academic indexing services than in international organizations' online databases. This might be because most of the academic indexing services are commercial based and they tend to publish e-journals which in most cases are a replacement of traditionally print journals. International organizations' online databases mainly publish research reports from their own projects.

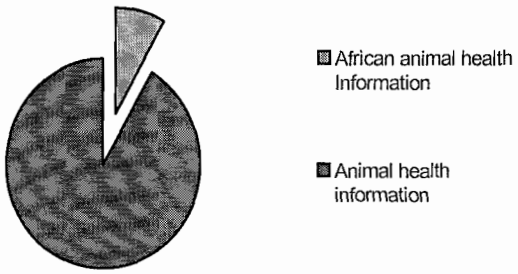

Figure 1: The representation of African animal health information

Figure 2 indicates that 353 articles (0.98%) on African animal health were found in African-based online databases while 35,701 (99.02%) were found in non-African online databases. The African based

online databases include the African Journals Online (AJOL), South African e-publications (SAePublications), African Women's Database, and Bibliography of African Periodical Literature Database. This calls for scholars from Africa to publish their research findings in African-based online databases.

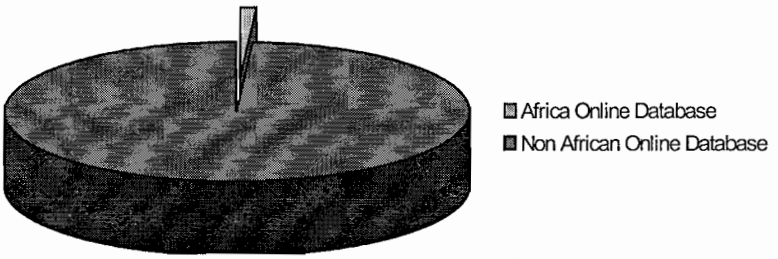

Figure 2: The representation of African animal health information in African and non-African online databases

Coverage of African animal health information in the individual online databases: A number of individual online databases were visited and analyzed to give an overview on some specific online databases as far as African animal health information is concerned. Figure 3 indicates the coverage of African animal health information in the individual online databases. In case of academic indexing services, Questia had the highest number of articles (48.92%) followed by AGRICOLA (14.54%), Cochrane Library (12.55%), Gale-Academic Asap (12.55%), and Pubmed (5.13%). International organizations' databases were as follows: CGIAR (46.43%), ELDIS (42.21%), AGRIS (34.45%) and CTA (20%). Indications are that the representation of African animal health information is still not satisfactory. None of the databases had more than fifty percent of the coverage of the African animal health information.

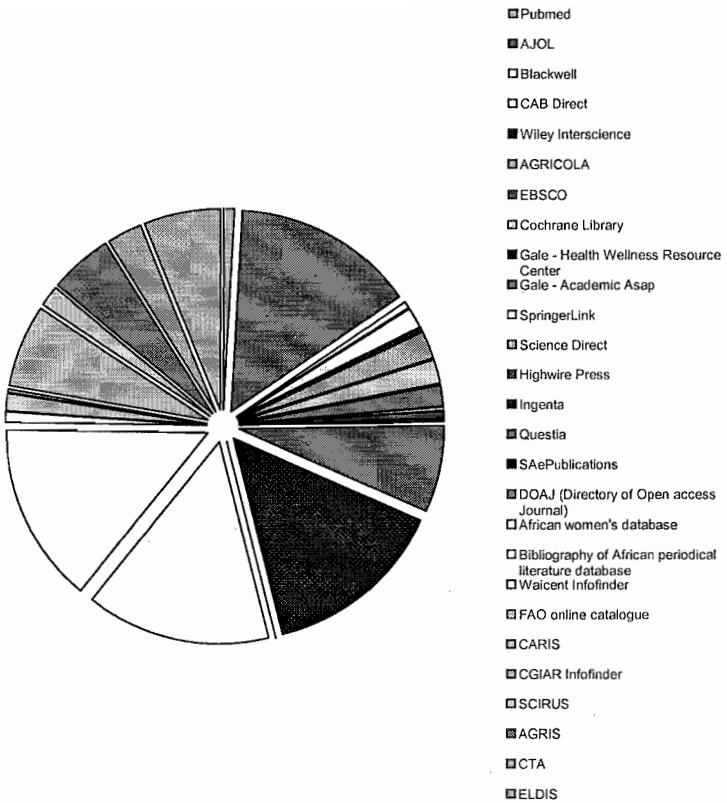

Figure 3: The coverage of African animal health information in individual online databases

Currency of animal health information: As indicated in Figure 4 below, all eight international organizations' databases had African animal health information updated up to 2004/2005 while only 13 academic indexing services (68.42%) had articles up to 2004/2005. This implies that African researchers participate well in adding new knowledge to the online databases.

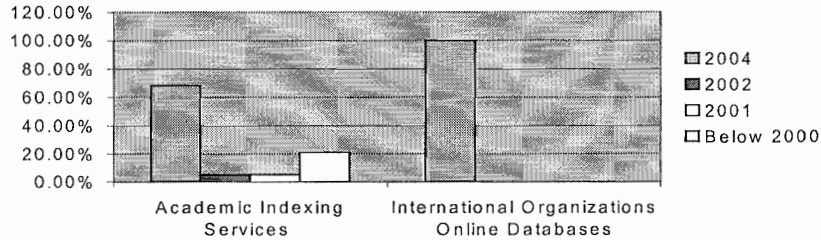

Figure 4: The currency of African animal health information

Locating animal health information: Results in figure 5 show that all selected sites had 'search' facilities that help their visitors to locate information easily. Many sites had both simple and advanced searching mechanisms which allow users to search the desired information using different fields. 'Help' facility was available in 13 (72.22%) academic indexing services and 5 (27.78%) international organizations' online databases. The 'email alert' facility was ranked third as it was included in 8 (29.63%) sites representing 50% for both academic indexing services and International organizations' online database categories. Six (22.22 %) sites including 4 (66.67%) academic indexing services and 2 (33.33%) international organizational online databases had 'what's new' facility on their websites. Only 5 (18.52%) online databases of academic indexing services had the 'Frequently Asked Questions (FAQ) facility.

These findings show that different online databases have varying facilities to help users locate information. Despite the fact that most users depend on these facilities to easily access information, some important facilities like FAQ, email alerts and what's new are not given enough consideration in many online databases.

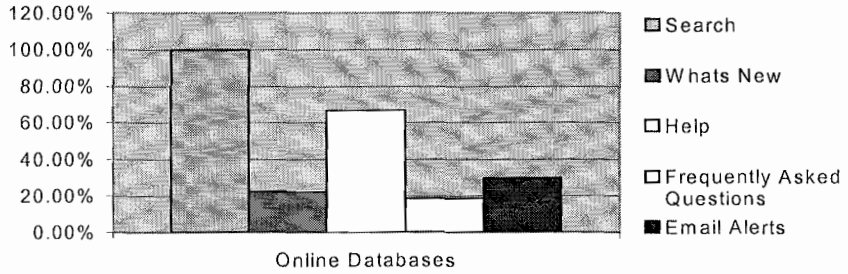

Figure 5: The location of African animal health information

Challenges African scientists face in publishing research findings on the web

African scientists face numerous challenges to publish research findings on the web. These include lack of recognition of value of information services, Africa's information and communication technology (ICT) environment, perceived misconceptions of actual causes, state of Africa's bibliographic and abstracting tools, inadequate funds, and lack of ICT literacy, awareness and mindset.

Lack of recognition for information services value: Most African countries inadequately recognize the importance of information

services. Many countries lack clear and coordinated information services with the required resources for processing and disseminating information on the web. Only few countries demonstrated the presence of these facilities such as South Africa with SABINET and Ghana with Ghananet. Consequently, online databases publishers mostly obtain African information from journals published in developed countries.

Africa's ICT environment: Poor infrastructure indirectly affects efforts of African scientists to publish online. The infrastructure in this context include telecommunications, electricity, transport and support infrastructure such as trainers, trouble-shooters; system designers and implementers; and ICT technical capability of people (Adam, 1999: Chowdhury, 1998). These present constraints for publishing research results online by putting limitations on the Internet to become reliable, dependable service and constantly available to researchers (Okunoye and Karsten, 2003). As a result, many researchers have not been able to cope with the global technological changes. However, the situation is slightly changing due to efforts made by governments, private sectors and donors to improve Africa connectivity, ICT infrastructure, facilities and technical expertise.

Perceived misconceptions of actual causes: On the one hand scholars from developing countries have been exerting blame on international database publishers as being unconcerned and therefore insensitive to the valuable information that originates from the south. On the other hand, foreign databases publishers have continuously believed that, given the low rate of research and publishing activities in many developing countries, not much relevant literature or information can come out of them (Katundu, 2000). This wrong perception of the actual causes from both sides has misled African scholars to believe that the responsibility for this concept is externally generated without critically analyzing the African information environment. There is a need for serious assessment of Africa's information environment if the actual causes of the misconception problem of African information professionals and those from developed countries are to be identified and dealt with.

State of Africa's bibliographic and abstracting tools: Bibliographic and abstracting tools play a major role in disseminating research

information. They help the scholars to know the publications that are available in their fields through union catalogues, national bibliographies etc. However, there have been problems in the compilation and dissemination of these tools in Africa. Agoulu (1990) states that limitations in knowledge – linguistic, subject, or bibliographic – time constraints, manpower and finance, and legal deposit evasions are the causes of lack of such bibliographic and abstracting tools. Additionally, most African libraries and information systems lack proactive professionalism, creativity and enthusiasm, and a hidden reluctance among information specialists to provide these information services also complicates the problem (Nawe, 1996 and Cabezas, 1995). Therefore, African information professionals are challenged to actively develop these tools by taking the advantage of the technologies which can speed up the organization and dissemination of union catalogues and national bibliographies.

Inadequate funds: Inadequate funding inhibits most African researchers to conduct research. Most of them depend on donor support of which their provision is only limited to some disciplines, they are competitive and not sustainable. Inadequate funds also limit African scholars and researchers to attend international conferences and workshops for presenting their research findings. Many initiatives such as the library of commons publish the conference papers and other research papers online of which African scholars could benefit, if capacitated in terms of attending conferences.

Lack of ICT literacy, awareness and mindset: ICT awareness involves knowing about the existence and importance of ICT tools and their application. Many researchers in Africa still lack ICT awareness and necessary skills for deploying ICTs. As Tusubira and Mulira (2004) explain "there tends to be some vague knowledge about ICT, interpreted as simply an advanced technology that requires a lot of expertise, a lot of money, and very advanced skills". It is not appreciated as a means of creating efficiency and cost-effectiveness. This goes along with the fact that people's mindset is still stuck to the old ways of doing things. Formally organized awareness workshops, real systems demonstrations and visitations, exhibitions and conferences could help in addressing awareness and mindset problems (Lwoga *et al*, 2005). As a result, African scholars and researchers would be able to deploy ICTs in order to access and publish research information online.

Opportunities for African scientists to publish research results on the web

There are many opportunities that African scientists as well as African research bodies can use to increase the extent of the African content on the web.

Improvement of ICT infrastructure: There is opportunity for academic and research institutions in Africa to actively explore the existing and evolving Internet applications to publish their information. With the little donor and government support currently available, academic and research organizations could form Internet-based networks to reduce the cost of connection and improve the reliability of the services.

Collaboration with African academic and research organization: With the donor support, most academic and research establishments like universities, research organizations and regional and sub-regional organizations have improved their ICT infrastructure. This has enhanced the wide accessibility of African information on the web. Most of these institutions own websites and some of them have established electronic cooperatives national academy or research information networks. Examples of these include Ghana (Ghananet) and the Republic of South Africa (SABINET).

Regional-wise, organization such as African Bib, Pan African Development Information systems (PADIS), Association of African University (AAU) and African Academy of Sciences have the required ICT infrastructure and expertise which can be used to promote and disseminate the animal health information generated from Africa (Katundu, 2000). One example is the Database on African Theses and Dissertations (DATAD) project that can be used as venture for young African's researchers to publish their dissertations and theses online. African bib can also be used by African scholars to publish their research publications in bibliographic format. African publishers can also take the advantage of initiatives such as the African Journals Online (AJOL). Currently AJOL has about 207 journals which represent a fraction of all the available journals in Africa

Collaboration with International Organizations: International organizations increasingly support African scholars in the publication and dissemination of Africa's information on the web. Such organizations include the Electronic Supply of Electronic

Publications (eSAP) project, Technical Centre for Agricultural and Rural Cooperation (CTA), International Network for Availability Scientific Publications (INASP), the American Association for Advancement of Science (AAAS), and Library of Commons. African scholars are thus urged to exploit and explore these opportunities although as Katundu (2000) correctly observes one obstacle which inhibits Africans involvement is that Africa's information still lacks a mechanism through which it can be effectively organized and processed for dissemination.

Usage of Open access movement: Scientists in developing countries can gain from the Open Access (OA) movement. African institutes such as universities should take a leading role in the OA movement by establishing OA archives in their institutions. This will increase the accessibility, visibility, interactivity and usability of African agricultural research, thus accelerating the Africa's research activity. At the same time, this will enable scientists who often have difficulty in, getting their work published in international scientific journals to benefit from seeing it placed in OA archives, where it can be accessed globally. The number of African agricultural libraries prepared to establish their own electronic archives so far remains disappointingly low and only a few African countries have managed to implement OA archives (Lwoga and Chilimo, 2006). Further, African researchers can also take advantage of Open Access (OA) journals to publish their findings online since they have the least means to publish and access their own and world's knowledge.

Development of regional bodies, cooperation or association: Libraries in Africa can establish cooperation and association which will be used to share information. For instance, establishing library consortium can help libraries to establish their own online database by sharing their union catalogues, national bibliographies and full text digital research information. This would motivate and enhance the African scholars to publish their research findings online.

Conclusion

This paper assessed the representation of African web-based animal health information in order to determine the coverage of African animal health information on the web. The results revealed that the representation of African animal health information on the web is still inadequate. The poor coverage of animal health information on the web emanates from the poor ICT infrastructure in many African

countries, lack of ICT literacy, awareness and mindset. Others are lack of recognition of information services value, poor state of African indexing and abstracting services, inadequate funds and perceived misconceptions of actual causes of the problem. Thus, this makes the web to be dominated with the animal health information from developed countries. Despite the challenges faced by Africans scholars and researchers in publishing their research findings on the web, African scholars were found to collaborate well with other international organizations in disseminating animal health information on the web. This paper recommends that internet availability should be utilized to expand Africans' ability to access and disseminate information. In order to expand their ability publish online, it is recommended to make use of the following opportunities: development of regional associations, usage of open access movement, improvement of ICT infrastructure, cooperation with the international bodies and other African academic and research organization.

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